

### REMARKS

Claims 1-77 were previously pending in this application. By this amendment, Applicants are canceling claims 8, 10, 11, 14, 31-39, 41, 43, 46, 61-67, and 73 without prejudice or disclaimer. Claims 7, 9, 13, 16, 40, 42, 48, 68, 71, 72, 75, and 77 have been amended. As a result, claims 1-7, 9, 12, 13, 15-30, 40, 42, 44, 45, 47-60, 68-72, and 74-77 are pending for examination with claims 1, 7, 15, 40, 47, 68, and 69 being independent claims. No new matter has been added.

#### Claims 1-7

Claim 1 was rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,371,945 (Karr), and claims 2-6 were rejected under 35 U.S.C. §103(a) as being unpatentable over Karr.

Presently-pending claim 1 reads as follows, with particular portions highlighted for emphasis:

1. A display unit to be mounted on a wrist of a user, comprising:
  - a display screen to visually display characters, the display screen having a top edge and a bottom edge corresponding, respectively, to tops and bottoms of the characters displayed on the display screen;
  - a base supporting the display screen and housing electronic circuitry associated with the display screen; and
  - at least one strap attached to the base and adapted to secure the base to the wrist of the user;wherein the base is configured and arranged such that, when the base is secured to the wrist of the user with the at least one strap, **the top edge of the display screen is disposed a first distance away from an outer surface of the user's wrist** as determined along a first line oriented normal to the outer surface of the user's wrist and passing through the top edge of the display screen, and **the bottom edge of the display screen is disposed a second distance away from an outer surface of the user's wrist** as determined along a second line oriented normal to the outer surface of the user's wrist and passing through the bottom edge of the display screen, wherein the first distance is greater than the second distance.

Claim 1 is thus drawn to a display unit in which a top edge of a display screen is disposed farther away from a user's wrist than is a bottom edge of the display screen. An illustrative embodiment of such a display screen is shown in Figs. 3A-B of the application.

The display screen in Karr (see Fig. 1) is configured to be parallel to the plane of a user's wrist (see reference numeral 16 in Fig. 2), and Karr does not disclose or suggest that the display screen 16 could or should be configured to be oriented in the manner recited in claim 1.

Claim 1 therefore distinguishes patentably over Karr, and the rejection of claim 1 over that reference should be withdrawn.

Each of claims 2-7, being dependent on claim 1, distinguishes patentably over Karr for at least the same reasons.

#### Claims 7, 9, and 12-13

These claims were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,032,108 (Seiple).

For the reasons stated in the attached Declaration of Norbert Ohlenbush under 37 C.F.R. §1.131, the subject matter of all of these claims was reduced to practice prior to the July 8, 1998 filing date of Seiple. Accordingly, Seiple is not prior art to these claims under 35 U.S.C. §102(e), and the rejection over that reference should be withdrawn.

Applicants have amended claim 7 to distinguish patentably over Karr. Although Karr teaches the simultaneous display of distance traveled and average pace (see col. 5, lines 27-35), it does not disclose or suggest the simultaneous display of information indicative of determined values of the instantaneous pace of a user and the average pace of the user.

#### Claims 15-30, 74 and 75

Claims 15-22, 25, and 28-30 were rejected under 35 U.S.C. §102(e) as being anticipated by Seiple, and claims 23, 24, 26, 27, 74, and 75 were rejected under 35 U.S.C. §103(a) as being unpatentable over Seiple in view U.S. Patent No. 5,891,042 (Sham).

Applicants do not concede that Seiple is prior art under 35 U.S.C. §102(e), and reserve the right to submit evidence sufficient to antedate its July 8, 1998 filing date at a subsequent

point in the prosecution. Such a step should be unnecessary, however, as these claims would distinguish patentably over the subject matter disclosed in Seiple, either alone or in combination with Sham, even if such subject matter were conclusively shown to be in the prior art.

Presently-pending claim 15 reads as follows, with particular portions highlighted for emphasis:

15. A method, comprising steps of:
- (a) with at least one device supported by a user while the user is in locomotion on foot, determining a value of at least one variable physiological parameter of the user;
  - (b) with the at least one device, determining a value of at least one performance parameter of the user; and
  - (c) **displaying** visually-perceptible information indicative of the determined values of the **at least one variable physiological parameter** of the user **and** the **at least one performance parameter** of the user, ***simultaneously***.

Claim 15 is thus drawn to the simultaneous display of information indicative of at least one variable physiological parameter of a user (e.g., heart rate) and at least one performance parameter of the user (e.g., instantaneous pace).

Although Seiple states that “biomedical information” may be input into the disclosed microprocessor to permit such information to be “correlated with the actual performance of the individual,” (see col. 9, lines 49-57), it does not disclose or suggest the display of such biomedical information simultaneously with the display of a performance parameter.

Sham, which was applied only against dependent claims 23, 24, 26, 27, 74, and 75, also does not teach or suggest the simultaneous display of both a physiological parameter and a performance parameter. Instead, in Sham, the user was required to click on a button to sequentially cycle through a set of “modes” and thereby view one piece of data at a time. (See Fig. 6, and col. 4, line 65-col. 5, line 7).

Thus, even assuming, *arguendo*, that Seiple was prior art, neither Seiple nor Sham, nor the proposed combination of the two, would have disclosed or suggested the invention recited in claim 15 to one of ordinary skill in the art. The stated rejection of claim 15 (and dependent claims 16-30, 74, and 75) should therefore be withdrawn.

Claims 40, 42, and 45

These claims were rejected under 35 U.S.C. §102(e) as being anticipated by Seiple.

For the reasons stated in the attached Declaration of Norbert Ohlenbusch under 37 C.F.R. §1.131, the subject matter of all of these claims was reduced to practice prior to the July 8, 1998 filing date of Seiple. Accordingly, Seiple is not prior art to these claims under 35 U.S.C. §102(e), and the rejection over that reference should be withdrawn.

Applicants have amended claim 40 to distinguish patentably over Karr. Although Karr teaches a device capable of simultaneously displaying distance traveled and average pace (see col. 5, lines 27-35), it does not disclose or suggest the simultaneous display of information indicative of determined values of the instantaneous pace of a user and the average pace of the user.

Claims 47-60, 76, and 77

Claims 47-60 were rejected under 35 U.S.C. §102(e) as being anticipated by Seiple.

Applicants do not concede that Seiple is prior art under 35 U.S.C. §102(e) to these claims, and reserve the right to submit evidence sufficient to antedate its July 8, 1998 filing date at a subsequent point in the prosecution. Such a step should be unnecessary, however, as these claims would distinguish patentably over the subject matter disclosed in Seiple, even if such subject matter were conclusively shown to be in the prior art.

Presently-pending claim 47 reads as follows, with particular portions highlighted for emphasis:

47. A system, comprising:  
at least one device adapted to be supported by a user while the user is in locomotion on foot, the at least one device including a first sensor to determine a value of at least one variable physiological parameter of the user, a second sensor to determine a value of at least one performance parameter of the user, and a display configured to **display** visually-perceptible information indicative of the determined values of the **at least one variable physiological parameter** of the user *and* the **at least one performance parameter** of the user, *simultaneously*.

As discussed above in connection with claim 15, Although Seiple states that “biomedical information” may be input into the disclosed microprocessor to permit such information to be “correlated with the actual performance of the individual,” (see col. 9, lines 49-57), it does not disclose or suggest the display of such biomedical information simultaneously with the display of a performance parameter.

Thus, even assuming, *arguendo*, that Seiple was prior art, claim 47 would distinguish patentably over it, and the rejection of claim 69 based upon that reference should be withdrawn.

Each of claims 48-60, 76, and 77, being dependent on claim 47, would distinguish patentably over Seiple for at least the same reasons.

#### Claim 68

Claim 68 was rejected under 35 U.S.C. §102(e) as being anticipated by Seiple.

For the reasons stated in the attached Declaration of Norbert Ohlenbush under 37 C.F.R. §1.131, the subject matter of this claim was reduced to practice prior to the July 8, 1998 filing date of Seiple. Accordingly, Seiple is not prior art to claim 68 under 35 U.S.C. §102(e), and the rejection over that reference should be withdrawn.

Applicants have amended claim 68 to distinguish patentably over Karr. Although Karr teaches a device capable of simultaneously displaying distance traveled and average pace (see col. 5, lines 27-35), it does not disclose or suggest the simultaneous display of information indicative of determined values of the instantaneous pace of a user and the average pace of the user.

#### Claims 69-72

Claims 69-72 were rejected under 35 U.S.C. §102(e) as being anticipated by Seiple.

Applicants do not concede that Seiple is prior art under 35 U.S.C. §102(e) to these claims, and reserve the right to submit evidence sufficient to antedate its July 8, 1998 filing date at a subsequent point in the prosecution. Such a step should be unnecessary, however, as these claims would distinguish patentably over the subject matter disclosed in Seiple, even if such subject matter were conclusively shown to be in the prior art.

Presently-pending claim 69 reads as follows, with particular portions highlighted for emphasis:

69. A system, comprising:  
first means, adapted to be supported by a user while the user is in locomotion on foot, for determining a value of at least one variable physiological parameter of a user;  
second means, adapted to be supported by the user while the user is in locomotion on foot, for determining a value of at least one performance parameter of the user; and  
third **means**, adapted to be supported by the user while the user is in locomotion on foot, **for displaying** visually-perceptible information indicative of the determined values of the **at least one variable physiological parameter** of the user **and the at least one performance parameter** of the user, ***simultaneously***.

As discussed above in connection with claim 15, Although Seiple states that “biomedical information” may be input into the disclosed microprocessor to permit such information to be “correlated with the actual performance of the individual,” (see col. 9, lines 49-57), it does not disclose or suggest the display of such biomedical information simultaneously with the display of a performance parameter.

Thus, even assuming, *arguendo*, that Seiple was prior art, claim 69 would distinguish patentably over it, and the rejection of claim 69 based upon that reference should be withdrawn.

Each of claims 70-72, being dependent on claim 69, would distinguish patentably over Seiple for at least the same reasons.

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Conf. No.: 8707

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### **CONCLUSION**

In view of the foregoing amendments and remarks, this application should now be in condition for allowance. A notice to this effect is respectfully requested. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is requested to call the Applicants' attorney at the telephone number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicants hereby request any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 23/2825.

Respectfully submitted,  
*Norbert Ohlenbusch, et al., Applicants*

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Docket No. P0663.70021US00  
Date: April 15, 2004  
x04/15/04x

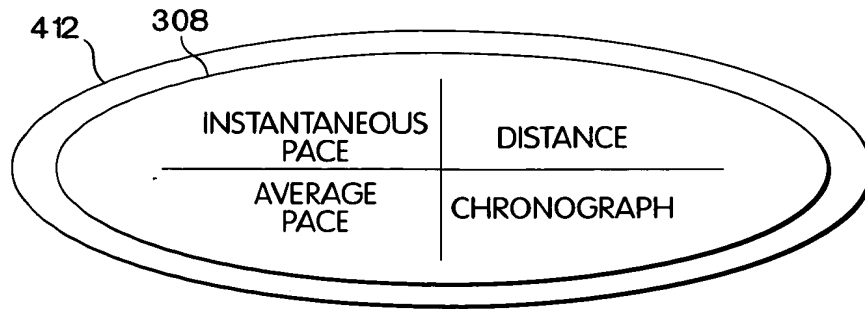


Fig. 32A

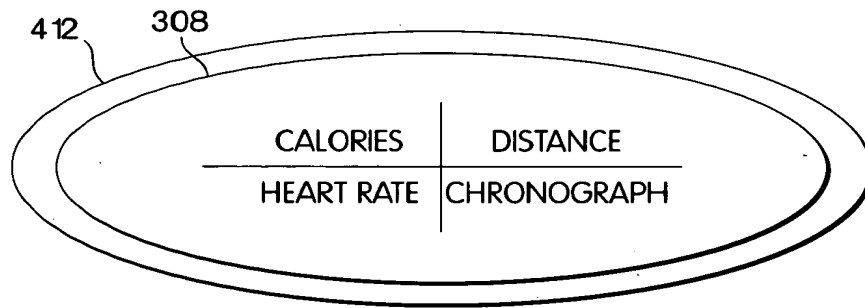


Fig. 32B

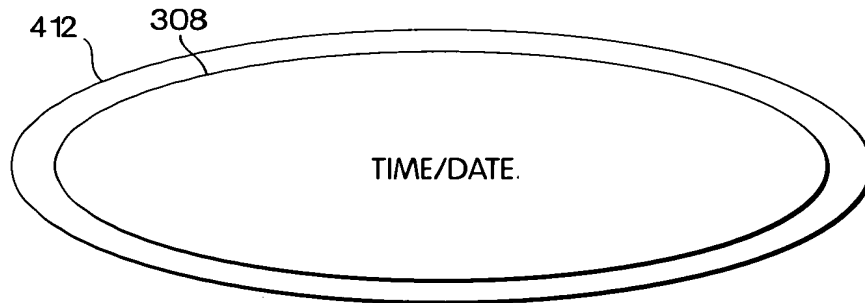


Fig. 32C

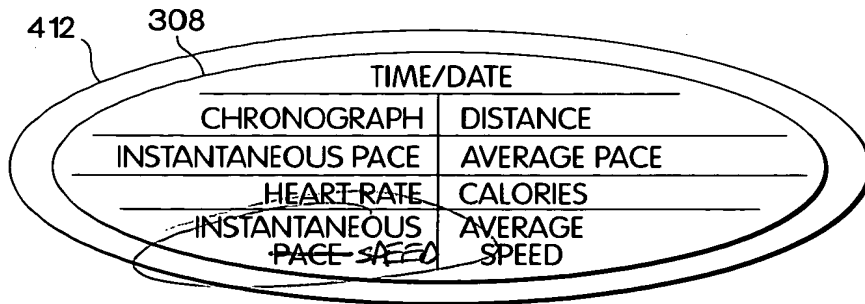


Fig. 32D





DOCKET NO: P0663.70021US00

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Ohlenbusch, et al.  
Serial No: 09/643,195  
Confirmation No: 8707  
Filed: August 21, 2000  
For: MONITORING ACTIVITY OF A USER IN  
LOCOMOTION ON FOOT  
  
Examiner: Xuan Hien Vo  
Art Unit: 2863

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**CERTIFICATE OF MAILING UNDER 37 C.F.R. §1.8(a)**

The undersigned hereby certifies that this document is being placed in the United States mail with first-class postage attached, addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the 15<sup>th</sup> day of April, 2004.

Pamela Smith-Victor  
Signature

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Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**DECLARATION OF NORBERT OHLENBUSCH UNDER 37 C.F.R. §1.131**

Sir:

I, Norbert Ohlenbusch, one of the named inventors in the above-identified application, hereby declare as follows:

1. I was the sole inventor of the subject matter recited in the following claims that are presently pending in this application:

7. A method, comprising steps of:
  - (a) with at least one device supported by a user while the user is in locomotion on foot, determining respective values of at least an instantaneous pace of the user and an average pace of the user; and
  - (b) displaying visually-perceptible information indicative of the determined values of the instantaneous pace of the user and the average pace of the user, simultaneously.

9. The method of claim 7, wherein:  
the step (a) comprises determining a value of a distance traveled by the user; and

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the step (b) comprises displaying visually-perceptible information indicative of the determined values of the instantaneous pace of the user, the average pace of the user, and the distance traveled by the user, simultaneously.

12. The method of claim 7, wherein the step (b) includes a step of:  
(b1) displaying the visually-perceptible information with the at least one device.

13. The method of claim 7, wherein the at least one device includes at least first and second separate devices, and wherein:  
the step (a) includes a step of (a1) determining the respective values of the instantaneous pace of the user and the average pace of the user with the first device; and  
the step (b) includes a step of (b1) displaying the visually-perceptible information with the second device.

40. A system, comprising:  
at least one device adapted to be supported by a user while the user is in locomotion on foot, the at least one device including at least one sensor to determine respective values of at least an instantaneous pace of the user and an average pace of the user, the at least one device further comprising a display configured to display visually-perceptible information indicative of the determined values of the instantaneous pace of the user and the average pace of the user, simultaneously.

42. The system of claim 40, the at least one device is further configured to determine a value of a distance traveled by the user, and the display is configured to display visually-perceptible information indicative of the determined values of the instantaneous pace of the user, the average pace of the user, and the distance traveled by the user, simultaneously.

45. The system of claim 40, wherein the at least one device includes at least first and second separate devices, and wherein:  
the at least one sensor is included in the first device; and  
the display is included in the second device.

68. A system, comprising:  
means, adapted to be supported by a user while the user is in locomotion on foot, for determining respective values of at least an instantaneous pace of the user and an average pace of the user; and  
means, adapted to be supported by the user while the user is in locomotion on foot, for displaying visually-perceptible information indicative of the determined values of the instantaneous pace of the user and the average pace of the user, simultaneously.

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2. I conceived and reduced to practice the subject matter of the above claims prior to July 8, 1998.

3. Photographs of a system that embodied the subject matter of the above claims are attached to this declaration as Exhibit ("Ex.") A. The system depicted in Ex. A was constructed by me or at my direction prior to July 8, 1998.

4. A User Guide which described the basic operation of the system depicted in Ex. A is attached to this declaration as Ex. B. The User Guide attached as Ex. B was created prior to July 8, 1998.

5. As described on pages 2-3 of Ex. B, the system depicted in Ex. A included an Ankle Unit and a Handheld Unit. The Ankle Unit was adapted to be strapped to the ankle of a user and included a sensor and associated circuitry for determining, among other things, the instantaneous pace of the user, the average pace of the user, and the distance traveled by the user. The Handheld Unit was configured to display the instantaneous pace of the user, the average pace of the user, and the distance traveled by the user, simultaneously. The system depicted in Ex. A and described in Ex. B was shown to work satisfactorily for its intended purpose prior to July 8, 1998.

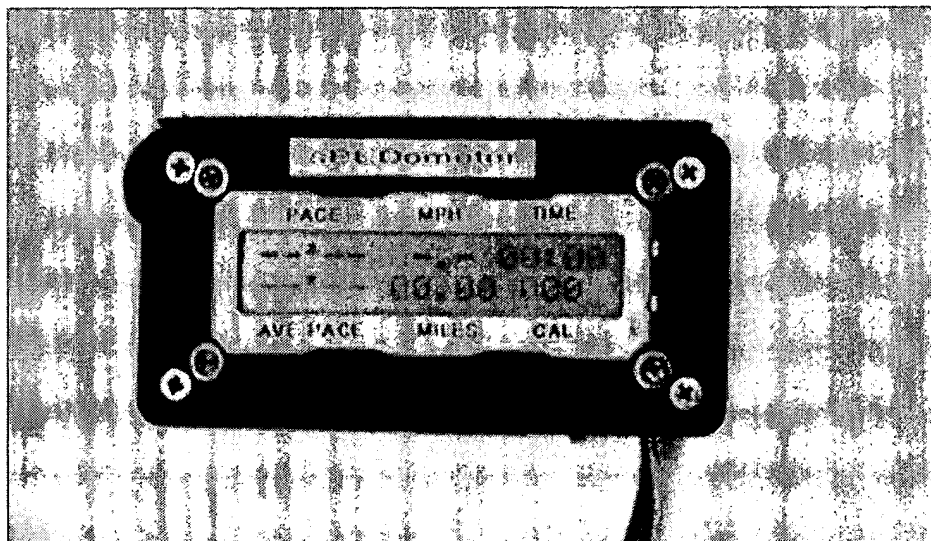
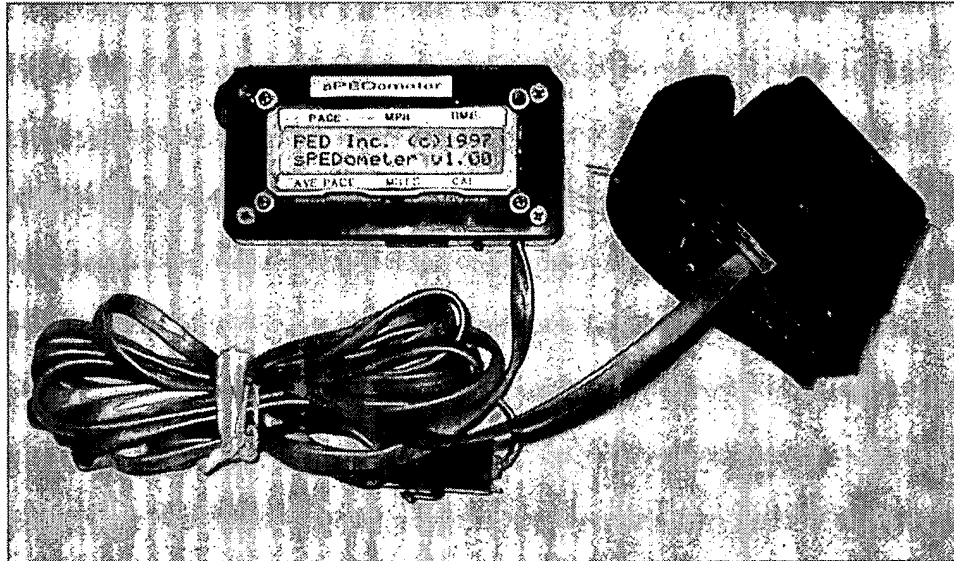
6. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.



Norbert Ohlenbusch, Declarant

Date: APRIL 14, 2004

# sPEDdometer v1.00



BEST AVAILABLE COPY

# ***sPEDometer<sup>TM</sup>***

## ***User Guide***

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Personal Electronic Devices, Inc.  
212 Worcester Street  
Wellesley, MA 02181  
[www.pedinc.com](http://www.pedinc.com)

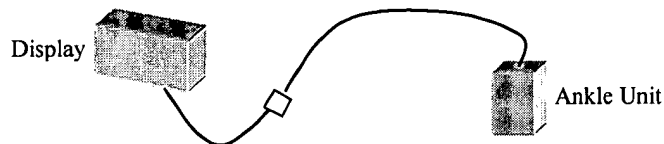
## sPEDometer™

### *The sPEDometer*

#### **Overview**

The PED Inc. sPEDometer provides a walker/jogger/runner with real-time feedback of pace, speed, distance traveled, and calories burned. The sPEDometer adapts automatically to changes in speed and stride.

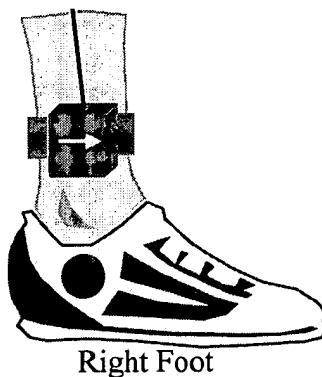
The sPEDometer consists of two pieces; an Ankle Unit and a Handheld Unit. The Ankle Unit measures foot activity and calculates statistics, which it then sends to the Handheld Unit for display.



Future versions of the sPEDometer will feature a wireless connection between the ankle unit and a multipurpose display unit. The new display will also wirelessly report heart rate, respiration, and body temperature.

#### **Ankle Unit**

The ankle unit should be worn on the **outside** of the right ankle with the cable facing **up** and the arrow pointing forward.



## Handheld Unit

Data is displayed on the handheld unit. During normal use the display provides the following data: Current Pace, Speed in miles per hour, Elapsed Time, Average Pace, Distance Traveled in 100ths of miles, and Calories. The layout of this data is shown below:

Current Pace	Speed	Elapsed Time
20' 00	3.0	03:30
16' 50	00.21	037
Average Pace	Miles	Calories

The sPEDometer is powered on and off via a small slide switch near the cable entry into the box. This switch is intentionally somewhat difficult to slide to reduce the chances of accidentally turning off the unit while you are collecting data.

The on/off switch can also be used to completely reset the sPEDometer. To reset the unit turn the unit off and wait at least 3 seconds before turning it back on. When first turned on, the screen should display:

PED Inc. (c) 1997
sPEDometer v1.00

If the screen displays the following text:

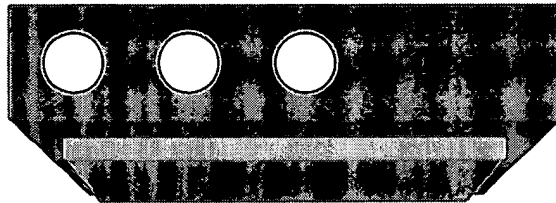
Send CR 8-N-1
Esc - Menu L2LL

Make sure that the unit was turned off for at least 3 seconds before turning it back on. In addition, make sure that the Foot Unit is connected and that no connectors are loose.

## Interface

The unit is controlled via three buttons:

**Start (-) Stop (+) Mode**



The buttons have the following functions:

**START (-)** : In Display Mode this button starts the elapsed timer and starts displaying activity information.

**STOP (+)** : In Display Mode this button stops the timer and stops updating the activity information. The elapsed time digits flash to signal that it is stopped.

**MODE** : The Mode button steps through the configuration modes. The unit must be stopped (elapsed time digits flashing) for the mode button to be recognized.

There are five user selectable modes:

- Display Mode
- Reset
- Weight Entry
- Bias Entry
- Custom

These modes are each described in the next sections.



## Modes

### Display Mode

Display Mode is the normal operating mode.

Activity data is displayed as follows:

Current Pace	Speed	Elapsed Time
20' 00	3.0	03:30
16' 50	00.21	037
Average Pace	Miles	Calories

**Current Pace** (in minutes and seconds) is the instantaneous pace based on the previous few steps.

**Speed** (in miles per hour) is the instantaneous speed of forward movement.

**Elapsed Time** (in minutes and seconds) is the elapsed time since that START button was pushed. When this field is *flashing* the unit is in STOP mode.

**Average Pace** (in minutes and seconds) is the average pace in minutes per mile. This value is calculated using the elapsed time divided by the distance and is updated every .01 miles. Note that this is that *true* average pace – if the clock is left running while the user has stopped, the average pace will correspondingly decrease.

**Miles** (in hundredths of a mile) is updated every 100<sup>th</sup> of a mile.

**Calories** (in calories) is calculated using the user weight value that was entered (if no weight was entered it is based on the default weight of 75 kg (165 lb.).

### Reset Mode:

Push Start/Stop  
to Clear

If the START or STOP button is pushed the display will clear to:

-- ' -- - . - 00:00  
-- ' -- 00.00 000

The 00:00 (elapsed time) will be flashing since the unit will be paused waiting for the start button to be pushed.

Pushing the MODE button, rather than the START or STOP buttons, will advance to the next mode: Weight Entry.

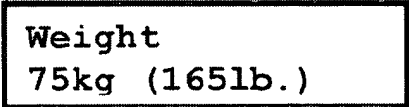
**Weight Entry Mod :**

User weight is required for accurate determination of caloric expenditure. Adjust the weight setting to the value closest to your weight.

User weight is entered via the START/- and STOP/+ buttons:

**START (-)** reduces the weight by 5 kg

**STOP (+)** increases the weight by 5 kg



Weight  
75kg (165lb.)

Pushing the MODE button will advance to the next mode: Bias Entry.

**Bias Entry Mode:**


Bias is entered via the START/- and STOP/+ buttons:

**START (-)** decrements through the bias values

**STOP (+)** advances through the bias values

The possible Bias values are:

- **Slower:** Biases the device to display somewhat lower speed values than the Standard setting. Use this setting if the device is reporting speeds higher than you expect or distances higher than you expect.
- **Standard:** Uses the standard motion model when determining speed, pace, and distance. This setting is a good match for most people. When first powered on the sPEDometer will use this setting until it is changed by the user via this menu.
- **Faster:** Biases the device to display somewhat higher speed values than the Standard setting. Use this setting if the device is reporting speeds lower than you expect or distances lower than you expect.
- **Custom:** Allows the user to determine his or her own personal bias or to enter a Personal Identification Number (PIN) representing a previously determined personal bias.
- 

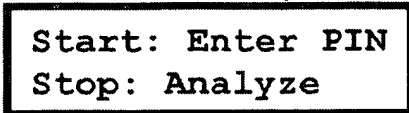


Bias:  
Standard

If you select *Slower*, *Standard*, or *Faster* then you will return to the Display Mode when you push the MODE button. If you have selected *CUSTOM*, then pushing the MODE button will take you to the following Customization display.

**Custom Bias:**

If you selected CUSTOM bias you will see the following display:



Start: Enter PIN  
Stop: Analyze

Push the START button if you already know your PIN

Push the STOP button to analyze your pace and determine your own PIN.

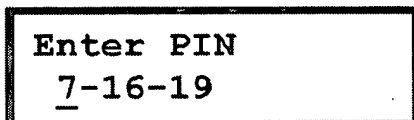
**Entering PIN:**

Enter you Personal Identification Number using the START and STOP buttons:

**START (-)** decreases the underlined number

**STOP (+)** increases the underlined number

**MODE** selects the next number field



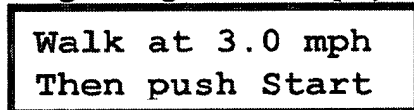
Enter PIN  
7-16-19

When the values are set to your PIN, push the mode button. You will be returned to the main Display screen.

**Analyzing and determining your PIN:**

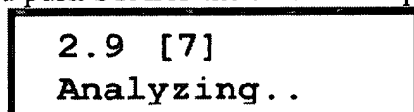
The sPEDometer features an optional calibration sequence that can learn the characteristics of your particular walking, jogging, and running styles. Once you have completed the calibration process you will be assigned a Personal Identification Number (PIN). The next time that you turn on your sPEDometer you can simply enter your PIN and go.

The following message will be displayed:



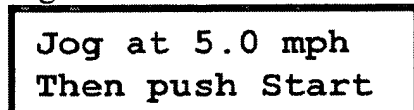
Walk at 3.0 mph  
Then push Start

Set the treadmill for 3.0 mph and begin walking. Once you have reached a comfortable stride, push the START button and continue to walk normally. Once you push START the unit will display:



2.9 [7]  
Analyzing..

The unit will gather data and look for a consistent pace. The unit tries to zero in on a characterization of your style and then looks for three consistent steps in a row. If the unit is having trouble determining your characteristics: try to take very consistent steps and then push the START button again to retry. If it still does not stabilize and move on to the next menu: push the STOP button to skip to the next stage. Once it has determined a walk value it will then display:



Jog at 5.0 mph  
Then push Start

Set the treadmill for 5.0 mph and begin jogging. Once you have reached a comfortable stride, push the START button and continue to jog normally. Continue just as you did for the walking step.

Repeat these steps when prompted to run at 7.5 mph.

Once you have calibrated at 7.5 mph the unit will display:

**Your PIN:**  
**7-16-19**

This is your Personal Identification Number (PIN) which represents your personal walking-jogging-running style. Record you PIN for future use.

Push the MODE button, the unit is now calibrated to you.

## **Maintenance**

The sPEDometer is powered by a 9 volt battery in the Display Unit. Before replacing the battery make sure that the unit is turned off. To access the battery, remove the four corner-most screws on the front of the display. Note the position of the installed battery ,carefully remove the old battery, and install a fresh battery in its place.

## **Known Behavior**

**Minimum and maximum speeds** – The unit supports speeds between 4:30 and 22:00 minutes per mile. Speeds outside of this range will likely result in inaccurate distance reporting.

**Hills** – Behavior on hills has not been fully characterized.

**Limps** – Accuracy is effected by limps or in cases where one leg moves significantly differently than the other.

## **Minutes per Mile to Miles per Hour Conversion Chart**

Minutes per Mile	Miles per Hour
4:00	15.0
5:00	12.0
6:00	10.0
7:00	8.6
8:00	7.5
9:00	6.7
10:00	6.0
11:00	5.5
12:00	5.0

Minutes per Mile	Miles per Hour
13:00	4.6
14:00	4.3
15:00	4.0
16:00	3.8
17:00	3.5
18:00	3.3
19:00	3.2
20:00	3.0
21:00	2.9